APPENDIX I

SUMMARY OF BASIC KEYWORDS, VARIABLE NAMES, AND PREDEFINE FUNCTIONS

KEYWORD	DESCRIPTION	EXAMPLES	CHAPTER REFERENCE
DATA	Stores numeric or string data in the program	**DATA 4,5,6,7** **DATA "JOE","JIM"**	4
DEF	Defines a function	**DEF FNA(X) = X/4**	5
DIM	Defines one- and two-dimensional arrays	**DIM A$(20),B(5,10)**	5
END	Indicates to the interpreter/compiler there are no more instructions and terminates execution of the program	**END**	3
FOR/NEXT	**FOR** begins a **FOR-NEXT** loop and specifies the control of the loop	**FOR X = 1 TO Y STEP 2**	5
	STEP specifies the value to be used to increment the running variable		
	NEXT transfers control to the beginning of the **FOR-NEXT** loop	**NEXT X**	5
GOSUB/RETURN	**GOSUB** transfers control to a subroutine	**GOSUB 80**	5
	RETURN transfers control from a subroutine back to the statement immediately following the GOSUB statement	**RETURN**	5
GOTO	Unconditionally transfers control to the statement specified	**GOTO 120**	4
IF THEN	If the condition proves true control is transferred to the specified statement number	**IF X = 2 THEN 70**	4
INPUT	Allows user to enter data during program execution	**INPUT X,Y$**	4
LET	Assigns the value of a constant, variable, or an expression to a variable	**LET X = 1** **LET X = X + 1**	3

KEYWORD	DESCRIPTION	EXAMPLES	CHAPTER REFERENCE
ON GOTO	Selects the line number of the next statement to be executed based on its positional relationship to the integer value of the variable or expression, and transfers control to that statement	**ON X/10 GOTO 70,90,110**	5
PRINT	Prints the value of any constant, variable, or expression	**PRINT 10** **PRINT X** **PRINT (X+Y)/2** **PRINT "MESSAGE"**	3
PRINT USING	Used in conjunction with a format line to print output in accordance with specifications in format line	**100 PRINT USING 110,N$** **110%###############** **70 PRINT USING 80,U,S** **80% $#,###.## $###.##**	6
READ	Assigns variable names to data in **DATA** statements	**READ C(X,Y)** **READ A,B$**	4
REM	Allows for programmer comments in the program	**REM THIS PROGRAM** **REM COMPUTES MILES** **REM PER GALLON**	2
RESTORE	Resets the pointer to the top of the data list. Used after **READ** statements when data is to be read more than once.	**RESTORE**	4
STOP	Terminates execution of the program. Can be used anywhere in a program. Does not replace the **END** statement	**STOP**	5
TAB	Used in conjunction with **PRINT** statement to specify in what print position printing is to begin	**PRINT TAB(25);C$** **PRINT TAB(40);"RATE"**	6

APPENDIX II

MAT STATEMENTS

As stated in Chapter 5, the functions that can be performed by **MAT** (matrix) statements can be done with **FOR-NEXT** loops. However, if your computer has MAT statements, it is more convenient to use one MAT statement to create a matrix than it is to use nested FOR-NEXT loops to do the same thing.

A matrix containing numbers can be read, inputted, added, subtracted, multiplied, printed, or manipulated in various ways. However, before any matrix operations can be performed, the computer must know the size of the matrix. The size of the matrix is defined by using DIM statements at the beginning of the program, for example, **DIM P(6, 12).**

To illustrate the convenience and power of MAT operations, let's use the sea pay program from Chapter 5.

```
10   DIM P(6,12)
20   FOR G = 1 TO 6
30   FOR S = 1 TO 12
40   READ P(G,S)
50   NEXT S
60   NEXT G
70   PRINT ''SEA PAY CALCULATION PROGRAM (E4-E9)''
80   PRINT ''INPUT WHOLE NUMBERS ONLY''
90   PRINT ''WHAT IS YOUR PAYGRADE''
100  INPUT G
110  LET G = G - 3
120  PRINT ''HOW MANY YEARS SEA DUTY (1-12)''
130  INPUT S
140  PRINT ''YOUR SEA PAY SHOULD BE $'';P(G,S)
150  DATA 60,125,160,175,175,175,175,175,175,175,175,175
160  DATA 70,140,175,185,190,205,220,220,220,220,220,220
170  DATA 135,170,190,210,215,225,235,245,255,255,255,255
180  DATA 145,215,235,255,260,265,265, 270,275,280,300,310
190  DATA 180,225,255,265,270,280,285,290,300,310,310,310
200  DATA 195,235,265,280,290,310,310,310,310,310,310,310
210  END
```

Lines 20 through 60 can be replaced by one MAT statement:

```
20 MAT READ P
```

Remember, line 10 is still needed to define the size of the matrix. One **MAT READ** will read all the data into a matrix named "P," with 6 rows and 12 columns.

The elements in the matrix will still be referenced by the values input at lines 100 and 130.. The method for identifying the elements in a matrix is the same as that used in Chapter 5. Each element in a matrix is identified by its row number and column number in a subscripted variable.

Suppose we wanted to print the entire matrix, we would include a statement such as:

```
65 MAT PRINT P
```

This one statement would cause the 72 elements in matrix P to be printed.

Another function that can be performed on a matrix is multiplication. Suppose there was a 4% increase in sea pay, and you wanted to update the sea pay table without rekeying the data. One way this could be accomplished is by multiplying all the elements in the matrix by 104. The MAT instruction to do this would look like this:

```
68 MAT P = (104)*P
```

This would cause all the elements in matrix P to be multiplied by 104 and the updated sea pay rates written back into the matrix named P. By multiplying the matrix by 1.04% (104), it eliminates computing the 4% increase and having to add the increase back into the matrix. The new rates are computed and automatically written back into the matrix named P.

The following list shows some MAT statements with an explanation of their function.

MAT Statement	Explanation of Function
MAT INPUT X	Allows user to input a matrix called X via the console (terminal)
MAT PRINT Z	Prints a matrix called Z
MAT READ M	Reads a matrix called M
MAT D = (N)*P	Defines matrix D as equal to the constant number N times matrix P (sea pay table example)
MAT C = X*Y	Defines matrix C as being equal to matrix X times matrix Y
MAT U = ZER	Completely fills matrix U with zeroes
MAT B = CON	Completely fills matrix B with ones

For more detailed instructions on the use of MAT instructions, consult your computer user's reference manual.

APPENDIX III

GLOSSARY

ARRAY—An arrangement of elements in a meaningful pattern of one or more dimensions.

CODING SHEETS—Forms or sheets of paper on which programs are written.

CONDITIONAL TRANSFER STATEMENT—A statement used to alter the normal sequence of program execution based on the result of the evaluation of a condition.

CONSTANT—An element whose value does not change during program execution.

DATA—Elements that represent information which may be processed or produced by a computer.

DECISION TABLE—A tabular method to show all the elements of a problem and what actions are to be taken based on all possible conditions of the elements. Used in problem analysis to document a problem solution.

EXPRESSION—A combination of symbols (constants, variables, arithmetic operators, and functions) used to define a desired computation or calculation.

FIELD—In a record, a specified area used for a particular category of data.

FILE—A collection of related records treated as a unit.

INCREMENT—To increase the value of a counter.

INTEGER—A positive or negative number without fractional parts.

INTERACTIVE—A computer environment that permits the user to respond directly to the actions of individual programs during their execution.

KEYWORDS—Words defined in the BASIC programming language and used in statements to identify the type of statement, such as LET, PRINT, READ, and DATA.

LINE NUMBER—A unique number placed at the beginning of each BASIC statement which serves as a statement label and program sequence number.

LOOP—A set of program instructions to be executed repetitively.

MACROINSTRUCTION—An instruction in a source language that is equivalent to a specified sequence of machine instructions.

MATRIX—A two-dimensional array.

MEMORY—An area in a computer which is capable of storing data and programs.

MNEMONIC SYMBOL—A symbol selected because it is easy to remember; e.g., "mpy" for "multiply."

PRINT ZONE—A specified area in a printed output line where the results of a print statement element may be printed. Each output line consists of multiple zones.

PROGRAM—A series of instructions in a given language which instructs a computer to perform specified operations to solve a problem.

PROGRAM EXECUTION—The interpretation and performance of the program instructions by the computer.

PROGRAMMING LANGUAGE—A language designed to express computer programs.

RECORD—A collection of related items of data treated as a unit.

SIGN—The arithmetic symbol used to identify a positive or negative value.

STATEMENT—A generalized source language instruction to a computer telling it to do a specified operation or series of operations.

SUBSCRIPT—A number, variable, or expression used with an array name to indicate the relative location of an element in a given array.

SYNTAX—The rules governing the structure of a language.

SYSTEM COMMAND—A command that can be given directly to the computer instructing it to do something with the system or a program, such as RUN, SAVE, and LIST.

TERMINAL—A human-to-machine and machine-to-human communication device that provides a means of interaction between an executing program and a person. Normally, a terminal is composed of a keyboard entry device and an interconnected display such as a printer or a cathode-ray tube.

UNCONDITIONAL TRANSFER STATEMENT—A statement used to alter the normal sequence of program execution regardless of any condition.

VARIABLE—An element whose value may change during program execution.

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OFFICER-ENLISTED CORRESPONDENCE COURSE

INTRODUCTION TO PROGRAMMING IN BASIC

NAVEDTRA 10079-2

Congratulations! By enrolling in this course, you have demonstrated a desire to improve yourself and the Navy. Remember, however, this self-study course is only one part of the total Navy training program. Practical experience, schools, selected reading, and your desire to succeed are also necessary to successfully round out a fully meaningful training program. You have taken an important step in self-improvement. Keep up the good work.

HOW TO COMPLETE THIS COURSE SUCCESSFULLY

ERRATA: If an errata comes with this course, make all indicated changes or corrections before you start an assignment. Do not change or correct the textbook or assignments in any other way.

TEXTBOOK ASSIGNMENTS: The textbook for this course is Introduction to Programming in BASIC, NAVEDTRA 10079-2. The textbook pages that you are to study are listed at the beginning of each assignment. Study these pages carefully before attempting to answer the questions in the course. Pay close attention to tables and illustrations because they contain information that will help you understand the text. Read the learning objectives provided at the beginning of each chapter or topic in the text and/or preceding each set of questions in the course. Learning objectives state what you should be able to do after studying the material. answering the questions correctly helps you accomplish the objectives.

SELECTING YOUR ANSWERS: After studying the text, you should be ready to answer the questions in the assignment. Read each question carefully, then select the BEST answer. Be sure to select your answer from the subject matter in the textbook. You may refer freely to the textbook and seek advice and information from others on problems that may arise in the course. However, the answers must be the result of your own work and decisions. You are prohibited from referring to or copying the answers of others and from giving answers to anyone else taking the same course. Failure to follow these rules can result in suspension from the course and disciplinary action by the Commander, Naval Military Personnel Command.

SUBMITTING COMPLETED ANSWER SHEETS: It is recommended that you complete all assignments as quickly as practicable to derive maximum benefit from the course. However, as a minimum, your schedule should provide for the completion of at least one assignment per month--a requirement established by the Chief of Naval Education and Training. Failure to meet this requirement could result in disenrollment from the course.

TYPES OF ANSWER SHEETS: If you received Automatic Data Processing (ADP) answer sheets with this course, the course is being administered by the Naval Education and Training Program Development Center (NAVEDTRAPRODEVCEN), and you should follow the instructions in paragraph A below. If you did NOT receive ADP answer sheets with this course, you should use the manually scored answer sheets attached at the end of the course and follow the directions contained in paragraph B below.

A. ADP Answer Sheets

All courses administered by the NAVEDTRAPRODEVCEN include one blank ADP answer sheet for each assignment. For proper computer processing, use only the original ADP answer sheets. Reproductions are not acceptable.

Recording Information on the ADP Answer Sheets: Follow the "MARKING INSTRUCTIONS" on the answer sheet. Be sure that blocks 1, 2, and 3 are filled in correctly. This information is necessary for your course to be properly processed and for you to receive credit for your work.

As you work the course, be sure to mark your answers in the course booklet because your answer sheets will not be returned to you. When you have completed an assignment,

transfer your answers from the course booklet to the answer sheet.

Mailing the Completed ADP Answer Sheets: As you complete each assignment, mail the completed ADP answer sheet to:

Commanding Officer
Naval Education and Training
Program Development Center
Pensacola, FL 32559-5000

The answer sheets must be mailed in envelopes, which you must either provide yourself or get from the local Educational Services Officer (ESO). You may enclose more than one answer sheet in a single envelope. Remember, regardless of how many answer sheets you submit at a time, the NAVEDTRAPRODEVCEN should receive at least one a month. NOTE: DO NOT USE THE COURSE COMMENTS PAGE AS AN ENVELOPE FOR RETURNING ANSWER SHEETS OR OTHER COURSE MATERIALS.

Grading: The NAVEDTRAPRODEVCEN will grade your answer sheets and notify YOU by letter of any incorrect answers. The passing score for each assignment is 3.4. Should you get less than 3.4 on any assignment, a blank ADP answer sheet will be enclosed with the letter listing the questions incorrectly answered. You will be required to redo the assignment and resubmit a new completed answer sheet. The maximum score that can be given for a resubmitted assignment is 3.4.

Course Completion: When you complete the last assignment, fill out the "course Completion" form in the back of the course and enclose it with your last answer sheet. The NAVEDTRAPRODEVCEN will issue you a letter certifying that you satisfactorily completed the course. You should ensure that credit for the course is entered in your service record.

Student Questions: Any questions concerning this course should be referred to the NAVEDTRAPRODEVCEN by mail using the address listed above or by telephone: AUTOVON 922-1329, FTS 948-1329, or commercial (904) 452-1329.

B. Manually Scored Answer Sheets

If you did not receive ADP answer sheets with this course, it is being administered by your local command and you must use the answer sheets attached at the end of the course booklet.

Recording Information on the Manually Scored Answer Sheets: Fill in the appropriate blanks at the top of the answer sheet. This information is necessary for your course to be properly processed and for you to receive credit for your work. As you work the course, be sure to mark your answers in the course booklet, because your answer sheets will not be returned to you. When you have completed an assignment, transfer your answers from the course booklet to the answer sheet.

Submitting the Completed Manually Scored Answer Sheets: As you complete each assignment, submit the completed answer sheet to your ESO for grading. You may submit more than one answer sheet at a time. Remember, you must submit at least one assignment a month.

Grading: Your ESO will grade the answer sheets and notify you of any incorrect answers. The passing score for each assignment is 3.4. Should you get less than 3.4 on any assignment, the ESO will not only list the questions incorrectly answered but will also give you a pink answer sheet marked "RESUBMIT." You will be required to redo the assignment and complete the "RESUBMIT" answer sheet. The maximum score that can be given for a resubmitted assignment is 3.4.

Course Completion: After you have submitted all the answer sheets and have earned at least a 3.4 on each assignment. your command will give you credit for this course by making the appropriate entry in your service record.

Student Questions: Any questions concerning the administration of this course should be referred to your ESO.

NAVAL RESERVE RETIREMENT CREDIT

This course is evaluated at 3 Naval Reserve retirement points, which will be credited upon satisfactory completion of the two assignments.

Points	Assignments
3	2

These points are creditable to personnel eligible to receive them under current directives governing retirement of Naval Reserve personnel.

Naval reserve officers should anticipate some delay in delivery of course completion

certification as certifications must be forwarded via Naval Officer Record Support Activity for recording and endorsement.

COURSE OBJECTIVES

In completing this OCC-ECC, you will demonstrate a knowledge of the BASIC computer programming language by correctly answering questions. Specifically, you should be able to:

DIFFERENTIATE between the problem solving steps in programming. DESCRIBE the purpose and characteristics of flowcharts. RECOGNIZE flowcharting symbols and their meanings. DESCRIBE the final steps in the programming process.

DESCRIBE the fundamental concepts, structure, and syntax of BASIC.

DESCRIBE the uses of the END and PRINT statements in BASIC programs and RECOGNIZE their syntax. IDENTIFY the symbols used for arithmetic operations. WRITE BASIC statements to solve arithmetic expressions. DEFINE and RECOGNIZE constants and variables.

CODE statements to introduce data into a computer system. SELECT and USE transfer of control statements to alter the normal sequence of program execution and to control program loops.

DEFINE the structure and rules of FOR-NEXT loops. DEFINE and USE arrays. DESCRIBE functions and subroutines, and keywords.

CODE statements to format printed output.

DESCRIBE files and file handling concepts, terminology, and processing.

Naval courses may include a variety of questions -- multiple-choice, true-false, matching, etc. The questions are not grouped by type; regardless of type, they are presented in the same general sequence as the textbook material upon which they are based. This presentation is designed to preserve continuity of thought, permitting step-by-step development of ideas. Some courses use many types of questions, others only a few. The student can readily identify the type of each question (and the action required) through inspection of the samples given below.

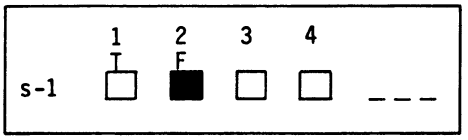
MULTIPLE-CHOICE QUESTIONS

Each question contains several alternatives, one of which provides the best answer to the question. Select the best alternative, and blacken the appropriate box on the answer sheet.

SAMPLE

s-1. The first person to be appointed Secretary of Defense under the National Security Act of 1947 was
1. George Marshall
2. James Forrestal
3. Chester Nimitz
4. William Halsey

Indicate in this way on the answer sheet:



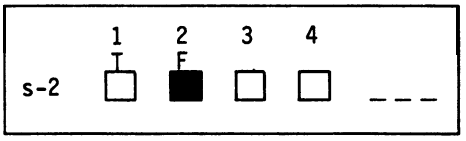
TRUE-FALSE QUESTIONS

Mark each statement true or false as indicated below. If any part of the statement is false the statement is to be considered false. Make the decision, and blacken the appropriate box on the answer sheet.

SAMPLE

s-2. Any naval officer is authorized to correspond officially with any systems command of the Department of the Navy without his commanding officer's endorsement.

Indicate in this way on the answer sheet:



MATCHING QUESTIONS

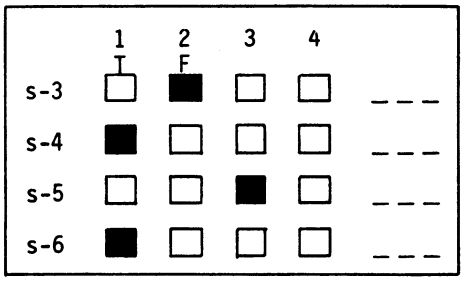
Each set of questions consists of two columns, each listing words, phrases or sentences. The task is to select the item in column B which is the best match for the item in column A that is being considered. Items in column B may be used once, more than once, or not at all. Specific instructions are given with each set of questions. Select the numbers identifying the answers and blacken the appropriate boxes on the answer sheet.

SAMPLE

In questions s-3 through s-6, match the name of the shipboard officer in column A by selecting from column B the name of the department in which the officer functions.

A	B
s-3. Damage Control Assistant	1. Operations Department
s-4. CIC Officer	2. Engineering Department
s-5. Disbursing Officer	3. Supply Department
s-6. Communications Officer	

Indicate in this way on the answer sheet:



Assignment 1

Introduction to Programming and the Fundamental Concepts and Structure of BASIC, Including Constants, Variables, Expressions, Arithmetic Operations, and Input/Output

Textbook Assignment: pages 1-1 through 4-6

Learning Objective: Differentiate between the problem solving steps used in programming.

1-1. Which of the following is the first and most important step in problem solving?

1. Preparing a flowchart of the problem solution
2. Developing a thorough understanding of the problem
3. Coding the program
4. Documenting the program

1-2. Once the problem definition is written, what is the next step in the problem-solving process?

1. Coding the program
2. Constructing the flowchart
3. Completing documentation
4. Preparing test data

Learning Objective: Describe the purpose and characteristics of flowcharts. Recognize the flowcharting symbols and their meanings.

1-3. A system flowchart is used to define the major phases of processing and to

1. specify equipment to be used
2. show the sequence of operations in a program
3. show the path of data through the problem solution
4. specify record layouts

1-4. A programming flowchart is used for which of the following purposes?

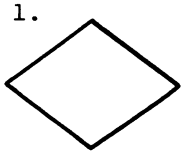
1. To represent the path of data through a problem solution
2. To represent the sequence of operations in a program
3. Both 1 and 2 above
4. To specify operator instructions

1-5. Who usually constructs the programming flowchart?

1. The customer
2. The data base analyst
3. The system analyst
4. The programmer

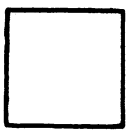
1-6. Which of the following flowcharting symbols would be used to indicate the testing of a relational condition?

1.



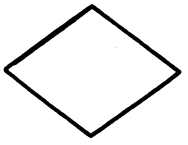
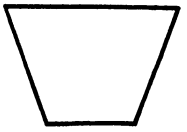
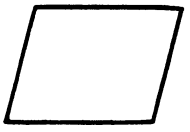
3.

2.



4.

TO ANSWER QUESTIONS 1-7 THROUGH 1-9, SELECT FROM COLUMN B THE SYMBOL THAT MATCHES THE OPERATION LISTED IN COLUMN A. ALL RESPONSES WILL NOT BE USED.

A. OPERATIONS	B. SYMBOLS
1-7. Compute average scores	1. 
1-8. read data file	2. 
1-9. If A > B THEN	3. 
	4. 

1-10. Arrows are used to represent the flow direction on a flowchart. What is the normal direction of flow , if any?

1. Left to right only
2. Top to bottom only
3. Left to right and top to bottom
4. There is no normal direction

Learning Objective: Differentiate between the types of programming instructions and languages.

1-11. The symbols in a flowchart represent the instruction(s) to be performed by the computer. What type of instruction allows comparison between data?

1. Arithmetic
2. Logic
3. Input/output
4. Unconditional transfer

1-12. An instruction which causes a change in the normal sequence of execution is called what type of instruction?

1. Logic
2. Transfer of control
3. Decision
4. Input/output

1-13. A programming language that is written in a code the computer understands without being translated is known as

1. symbolic language
2. machine language
3. procedure-oriented language
4. macro language

1-14. A programming language that is oriented toward a specific class of processing problems is known as

1. machine language
2. symbolic language
3. procedure-oriented language
4. macro language

1-15. Which of the following is NOT an advantage realized as a result of using a procedure-oriented language?

1. It is easier to learn
2. It is compatible with a variety of computers
3. It is easier to maintain
4. It uses less memory space

Learning Objective: Describe the final steps in the programming process.

1-16. The process of manually tracing data through typical program paths is known as

1. desk-checking
2. debugging
3. testing
4. verifying

1-17. The process of determining that valid and invalid data can be processed correctly and that the output is correct is known as

1. debugging
2. implementing
3. testing
4. documenting

1-18. The process of collecting, organizing, storing, and maintaining a history of a program and documents associated with it is known as

1. implementation
2. data collection
3. systems analysis
4. documentation

1-19 . The method of processing a job using both the old program and the new program is known as

1. multiprocessing
2. auxiliary processing
3. parallel processing
4. testing

Learning Objective: Describe the fundamental concepts, structures and syntax of BASIC.

1-20. Which of the following is the primary purpose for which BASIC was originally designed?

1. To be an easy-to-learn language
2. To be a scientific language
3. To be a general-purpose language
4. To be a file-processing language

1-21. Which of the following parts of a BASIC statement is used to indicate to the computer the sequence of the instructions?

1. Descriptive information
2. Keyword
3. Line number
4. Predefined function

1-22. What part of an instruction is used to tell the computer what function is to be performed?

1. Keyword
2. Operand
3. Interpreter
4. Line number

1-23. Which of the following is a valid BASIC line number?

1. 99.9
2. +85
3. 595
4. 7/8

1-24. In BASIC, which of the following symbols would be used to indicate a multiplication operation?

1. **
2. x
3. /
4. *

1-25. Which of the following numbers is valid in BASIC?

1. 3,245
2. 1/10
3. 9.76
4. $12.00

1-26. How would the number 34567890000 be represented using scientific notation in BASIC?

1. 3.456789E10
2. 3.456789E6
3. 3.46E10
4. 3.5E10

1-27. Some mathematical operations are so frequently used they have been incorporated into BASIC. They are known as

1. syntax functions
2. macro functions
3. fundamental functions
4. predefine functions

1-28. If you entered two statements with the same line number, which of the following conditions would prevail?

1. You would get an error message
2. The first statement with the duplicate statement number would be executed
3. The computer would assign another statement number to the duplicate statement
4. The second statement would replace the first one

1-29. Which of the following is the primary reason for incrementing line numbers by 10?

1. It is easier to keep track of the numbers used
2. It allows you to insert statements later without renumbering
3. It is required by the BASIC language
4. It makes it easier to reference statements to be changed

QUESTIONS 1-30 THROUGH 1-33 ARE TO BE JUDGED TRUE OR FALSE.

1-30 . When you are keying in a BASIC program and you omit a statement, you can enter it later as long as you assign the statement a line number that will cause it to be placed in the proper sequence.

1. True
2. False

1-31. There must be a space between each character in a BASIC statement.

1. True
2. False

1-32. Assume you make several mistakes while keying in a BASIC statement. You can correct them by depressing the backspace key once for each character you wish to erase or replace.

1. True
2. False

1-33. Logic errors are detected in a BASIC program by using the EDIT function.

1. True
2. False

1-34. Which of the following commands could be used to display a statement that has already been entered into the computer?

1. DELETE
2. INSERT
3. EDIT/RECALL
4. RETURN

1-35. Which of the following keywords is used to include documentation and/or programmer comments in a program?

1. COMMENT
2. ANNOTATION
3. REMARK
4. DOCUMENTATION

Learning Objective: Describe the uses of *END and PRINT statements in BASIC programs and recognize their syntax.*

1-36. What keyword indicates to the BASIC compiler that there are no more statements to be translated and terminates execution of a program?

1. PRINT
2. LET
3. END
4. STOP

1-37. In BASIC, the predefine format for printed output is referred to as what type of spacing?

1. Packed
2. Standard
3. Predefined
4. Zoned

1-38. Which of the following PRINT statements would print the value of a variable named Z?

1. 10 PRINT Z
2. 10 PRINT “Z=”
3. 10 PRINT “Z”
4. 10 PRINT (Z)

1-39. Which of the following PRINT statements would print the values for the variables X, Y, and Z?

1. 20 PRINT XYZ
2. 20 PRINT "X,Y,Z"
3. 20 PRINT X+Y+Z
4. 20 PRINT X,Y,Z

1-40. GIVEN : 10 PRINT (52+64-32)*4

What would be printed?

1. (52+64-32)*4
2. 52+64-32*4
3. 336
4. (52+64-32)*4=336

1-41. To print a message, the message must be enclosed in what punctuation?

1. Commas
2. Semicolons
3. Parentheses
4. Quotation marks

1-42. If a blank PRINT statement is included in a program, what effect, if any, will it have on the output?

1. It will cause a blank line in the output
2. It will cause an error message
3. It will serve as filler in case you want to add a PRINT statement later
4. It will have no effect, blank PRINT statements are ignored

1-43. In a PRINT statement, what punctuation marks are used as separators to cause standard spacing?

1. Semicolons
2. Commas
3. Quotation marks
4. Parentheses

1-44 . In a PRINT statement, what punctuation marks are used as separators to cause packed spacing?

1. Commas
2. Quotation marks
3. Parentheses
4. Semicolons

1-45. What is the purpose of using a comma at the end of a PRINT statement?

1. To cause a message to be printed exactly as it appears in the program
2. To cause a blank line in the printed output
3. To cause a blank field in the printed output
4. To allow the information in the following PRINT statement to be printed on the same line

1-46. When a comma is used at the end of a PRINT statement, where will the data in the following PRINT statement begin printing?

1. In the next available print zone
2. On the next print line
3. Immediately following the last character in the preceding print line
4. One space after the last character in the preceding print line

1-47. Which of the following effects will a semicolon in a PRINT statement have on the printed output?

1. Numeric data will always have two blank spaces between data elements
2. Messages will always be printed together
3. Both 1 and 2 above
4. Messages and numeric data will have two blank spaces between data elements

1-48. Where, if anywhere, are the results of computations done in PRINT statements stored?

1. They are stored in the program
2. They are stored in the computer's memory
3. They are stored on tape for later use
4. They are not stored, only printed

Learning Objective: Identify the symbols used for arithmetic operations. Write BASIC statements to solve arithmetic expressions.

1-49. What BASIC keyword is used to assign a value to a variable name or to instruct the computer to do a computation and assign the result to a variable name?

1. LET
2. PRINT
3. RESTORE
4. DEFINE

1-50. Which of the following best describes a LET statement?

1. It is a statement of algebraic equality
2. It is known as an assignment statement
3. Its values cannot be stored in a computer's memory
4. It is a value represented by algebraic symbols

1-51. Which of the following arithmetic expressions would be used to perform multiplication in BASIC?

1. XY
2. X•Y
3. X×Y
4. X*Y

1-52. In BASIC, if you forget to include the appropriate arithmetic operator in an arithmetic expression, which of the following conditions occurs?

1. The computer ignores the statement
2. The computer automatically assumes multiplication
3. The computer gives you an error condition
4. The computer uses the operator from the previous arithmetic expression

1-53. According to the precedence rule, which of the following arithmetic operations will the computer perform first?

1. **
2. *
3. /
4. +

1-54. GIVEN : 20 LET M=8/4*3

What would be the result?

1. .75
2. 6
3. 9
4. 96

1-55. What punctuation marks are used to alter the order of precedence in arithmetic expressions?

1. Commas
2. Parentheses
3. Semicolons
4. Quotation marks

1-56. Which of the following arithmetic expressions is properly coded to solve $B=\frac{M}{X+Y}$ in BASIC?

1. LET B=M/X+Y
2. LET B=(M/X+Y)
3. LET B=(M/X)+Y
4. LET B=M/(X+Y)

1-57. What is the order of performance of arithmetic operators when parentheses are inside parentheses?

1. Left to right
2. Inside pair performed first
3. Exponentiation is always done first
4. Right to left

Learning Objective: Define and recognize *constants and variables.*

1-58. What is the term used to refer to a location in memory whose value may change during program execution?

1. Constant
2. String
3. Variable
4. Operator

1-59. Constants have which of the following characteristics?

1. They may contain character strings only
2. They may contain numeric data only
3. Their values remain the same during program execution
4. Their values may change during program execution

1-60. Which of the following is a properly coded numeric-variable name?

1. M$
2. 1M
3. XY
4. A1

1-61. Which of the following variable names could be used to represent the data, “FRED MCGEE”, “DPC”?

1. N1, Rl
2. N$, RA
3. NA, R$
4. N$, R$

1-62. Which of the following describes numeric-variable names?

1. A single numeric digit (0-9)
2. Any two alphabetic characters (A-Z)
3. A single alphabetic character (A-Z), or one alphabetic character (A-Z), followed by a single numeric digit (0-9)
4. A single numeric digit (0-9) followed by one alphabetic character (A-Z)

Learning Objective: Code statements to introduce data into a computer system.

1-63. What keyword is used to access data stored in a program and assign it a variable name?

1. DATA
2. READ
3. INPUT
4. RESTORE

1-64. Data stored in a data list in the computer’s memory is specified by what keyword?

1. DATA
2. RESTORE
3. LET
4. LOAD

1-65. In what order are the values in data lists assigned to variable names in READ statements?

1. Randomly
2. Arbitrarily
3. Consecutively
4. Alphabetically

1-66. Which of the following conditions occurs when an excess of data in DATA statements is encountered?

1. The computer reassigns variable names beginning with the first one
2. The computer gives an error message
3. The computer terminates the program
4. The computer ignores the excess data

1-67. What punctuation marks are used to separate variables in READ statements and values in DATA statements?

1. Commas
2. Semicolons
3. Colons
4. Parentheses

1-68. GIVEN :
```
10 READ M,G,S,Y
20 DATA 475,16,42,20
```

What value would be assigned to the variable G?

1. 16
2. 20
3. 42
4. 475

1-69. What keyword is used to reset the pointer to the top of the data list in DATA statements?

1. RESET
2. RESTORE
3. LOAD
4. RETURN

1-70. What keyword is used to introduce data into a program during program execution?

1. READ
2. RESTORE
3. LOAD
4. INPUT

1-71. What punctuation is used to separate variable names specified in INPUT statements?

1. Semicolon
2. Question mark
3. Colon
4. Comma

```
10 READ P,Q,R
20 RESTORE
30 READ X,Y,Z
40 INPUT A,B
50 DATA 9,7,5
60 DATA 3,1
99 END
```

Figure 1A.--Program.

IN ANSWERING QUESTIONS 1-72 THROUGH 1-74, REFER TO FIGURE 1A.

1-72. After execution of the READ statement in line 10, at what value would the pointer be positioned?

1. 1
2. 5
3. 3
4. 9

1-73. What values, if any, would be assigned to the variables X, Y, and Z by the READ statement, line 30?

1. 9,7,5 would be assigned to X,Y, and Z respectively
2. 5,3,1 would be assigned to X,Y, and Z respectively
3. 3 and 1 would be assigned to X and Y respectively, no value would be assigned to Z
4. The computer would give an "INSUFFICIENT DATA" error message

1-74. What values would be assigned the variable names in the INPUT statement in line 40?

1. Any two alphabetic values entered by the user
2. Any two numeric values entered by the user
3. The first and second values in the DATA statement in line 50
4. The first and second values in the DATA statement in line 60

1-75. If you are entering data via an INPUT statement and you enter too few values, which of the following conditions occurs?

1. The computer processes the values entered
2. The computer gives you an "INSUFFICIENT DATA" error message
3. The computer responds with question marks until the specified number of values are entered
4. The program terminates

Assignment 2

Transfer of Control Statements, Loops, Functions, Subroutines, Arrays, Printed output, and File Processing Concepts

Textbook Assignment: pages 4-6 through 7-14 and figure 7-2

Learning Objective: Select and use transfer of *control statements to alter the normal sequence of program execution and to control program loops.*

2-1. In BASIC, a transfer of control instruction which alters the normal sequence of program execution based on the evaluation of a relationship is known as which of the following?

1. Conditional
2. Unconditional
3. Assignment
4. Subroutine

2-2. Which of the following keywords is used to unconditionally alter the normal sequence of program execution?

1. IF-THEN
2. ON-GOTO
3. COMPUTED GOTO
4. GOTO

2-3. Which of the following terms is used to refer to any sequence of instructions that is to be repeated some specified number of times or until a particular condition is met?

1. Loop
2. Subroutine
3. Branching
4. Cycling

2-4. What is the maximum number of conditions that result from the evaluation of a relational IF-THEN statement?

1. One
2. Two
3. Three
4. Four

2-5. The relational IF-THEN statement transfers control only if the state of the relationship tested proves to be which of the following?

1. True
2. False
3. Equal
4. Unequal

2-6. Which of the following statements would result in a branch to line 90 when X equals 70?

1. 40 IF END = 70 THEN 90
2. 40 IF X = 70 THEN 90
3. 40 ON X = 70 THEN 90
4. 40 ON X= 70 GOTO 90

2-7. Which of the following statements could be used to transfer control to line 200 when the loop has been executed 15 times?

1. 30 GOTO 200 WHEN C=15
2. 30 WHEN C=15 then 200
3. 30 IF C=15 THEN 200
4. 30 IF C EQUALS 15 THEN 200

2-8. A loop can be controlled by using a numeric variable as a counter and testing to determine when the counter reaches a predetermined number. Which of the following statements could be used to accumulate a count?

1. 80 ADD 1 TO C
2. 80 LET C EQUAL C PLUS 1
3. 80 LET C+1=C
4. 80 LET C=C+1

2-9. Before you use a variable as a counter, it is good practice to initialize it to be sure it

1. is defined by the program
2. contains the value you want it to have
3. contains a one
4. can be referenced as a counter

2-10. GIVEN:

```
10 ON X/10 GOTO 60,90,110,110
```

Which of the following values of X would cause control to be transferred to line 90?

1. X=2 only
2. X=20 only
3. X≥2 and <3
4. X≥20 and <30

IN ANSWERING QUESTIONS 2-11 THROUGH 2-14, REFER TO FIGURE 4-2 IN THE TEXT.

2-11. If you entered a Fahrenheit temperature of 220 and a 1, which set of statements would be executed following statements 60, 90, and 100?

1. 110,120,170,180
2. 110,130,140,170,180
3. 130,140,170,180
4. 130,140,150,170,180

2-12. Line 130 could be executed if which of the following conditions exists?

1. A Celsius temperature converted to Fahrenheit is equal to or greater than 100°F
2. A 2 is entered at line 50
3. A Fahrenheit temperature converted to Celsius is greater than 100°C
4. A Celsius temperature greater than 100 is entered at line 20

2-13. What value(s) input at line 180 will cause line 10 to be executed?

1. Q$
2. "Q$"
3. Both 1 and 2 above
4. Y

2-14. Under which, if any, of the following conditions will line 70 be executed?

1. When an integer value other than 1 or 2 is entered at line 50
2. When a Fahrenheit temperature and a 2 are entered
3. When a Celsius temperature and a 1 are entered
4. None of the above

Learning Objective: Define the structure and rules of FOR-NEXT loops.

2-15. Which of the following is the name given to the variable whose value is used to determine when a loop has been executed the specified number of times?

1. String-variable
2. Loop variable
3. Running variable
4. Control variable

2-16. Which of the following could be the first statement of a FOR-NEXT loop?

1. FOR X = 20
2. FOR X = 1 TO 20
3. FOR X = 1 NEXT 20
4. NEXT 20

2-17. Unless otherwise specified, the value of the running variable is increased by what value each time a FOR-NEXT loop is executed?

1. One
2. Two
3. Three
4. Four

2-18. GIVEN:

```
40 F0R A = 1 T0 20
50 PRINT A**2
60 NEXT A
```

What total number of times will this loop be executed?

1. 1
2. 19
3. 20
4. 21

2-19. What keyword(s) would be used to specify a running variable's value is to be incremented by some value other than one?

1. FOR-TO
2. FOR-NEXT
3. STEP
4. NEXT

QUESTIONS 2-20 THROUGH 2-23 ARE TO BE JUDGED TRUE OR FALSE.

2-20. A FOR-NEXT loop must always begin with a FOR-TO statement and end with a NEXT statement.

1. True
2. False

2-21. A running variable cannot be used inside a loop.

1. True
2. False

2-22. The running variable name used in the FOR-TO statement does not have to be the same as the one used in the NEXT statement.

1. True
2. False

2-23. Control can be transferred out of a FOR-NEXT loop but not into one.

1. True
2. False

2-24. Under which of the following conditions would a FOR-NEXT loop NOT be executed?

1. The initial and final values of the running variable are equal and the step size is zero
2. The final value of the running variable is less than the initial value and the step size is negative
3. The final value of the running variable is greater than the initial value and the step size is positive
4. Each of the above

2-25. A loop within a loop is known as what kind of loop?

1. DO
2. Computed GOTO
3. FOR-NEXT
4. Nested

Learning Objective: Define and use arrays.

2-26. What keyword is used to define the size of an array?

1. DATA
2. DEFINE
3. LET
4. DIMENSION

2-27. A subscripted variable is used to do which of the following?

1. Cause a branch to a sub-routine
2. Return control from a sub-routine to the main program
3. Indicate a data element's relative position in an array
4. Define the number of memory spaces needed for an array

2-28. Suppose you wanted to reference position five in a one dimensional array, which of the following terms could be used to accomplish this?

1. DIM (4,1)
2. D (5)
3. D (4,1)
4. DIM (5)

2-29. Which of the following DIM statements is properly coded to reserve 150 spaces in memory for a two-dimensional array with 15 columns and 10 rows?

1. 10 DIM (15,10)
2. 10 DIM A (15,10)
3. 10 DIM A (10,15)
4. 10 DIM (10,15)

2-30. Memory space for what total number of data elements is automatically reserved for a one-dimensional array?

1. 11
2. 12
3. 121
4. 133

2-31. Which of the following BASIC statements correctly references the data in row 12, column 10 of a matrix containing numeric data?

1. 10 LET X=Y (12,10)
2. 10 LET X$=Y$ (12,10)
3. 10 LET X=Y (10,12)
4. 10 LET X$=Y$ (1O,12)

2-32. Which of the following array names correctly identifies an array containing string data?

1. AB
2. D1
3. lA$
4. A$

Learning Objective: Describe functions and subroutines, including their syntax and keywords used.

2-33. GIVEN : 60 PRINT ABS (-10)

What is the name given to the to the number in parentheses?

1. Expression
2. Argument
3. Function
4. Value

2-34. If there is no predefine function to perform the computation you want to do, you may define your own by using what keyword?

1. FND
2. DEF
3. DIM
4. FN

2-35. Which of the following is a correctly-coded string function name?

1. FN$
2. FNA
3. FNA$
4. FN1$

2-36. At what point is the expression in a function definition statement evaluated?

1. When the program is compiled
2. When the defined function is referenced
3. When the function definition statement is encountered
4. When the argument is defined

2-37. A function may be defined a maximum of how many times in a program?

1. One
2. Two
3. Three
4. Four

2-38. What is the maximum number of numeric functions that may be defined in a single program?

1. 1
2. 26
3. 32
4. 36

2-39. A small program within another program is known as which of the following?

1. Loop
2. Nested loop
3. DO loop
4. Subroutine

2-40. What keyword(s) is/are used to transfer control to a subroutine?

1. GOTO
2. ON-GOTO
3. GOSUB
4. IF-THEN

2-41. What keyword is used to transfer control from a subroutine back to the main program?

1. RESET
2. RESTORE
3. RETURN
4. STOP

2-42. When control is transferred from a subroutine back to the main program, to what statement does control return?

1. The statement immediately following the RETURN statement
2. The statement immediately preceding the GOSUB statement
3. The last statement of the subroutine
4. The statement immediately following the GOSUB statement

2-43. Which of the following descriptions applies to the use of a STOP statement?

1. It must be the last statement of a subroutine
2. It must be the last statement in a program
3. It may be placed anywhere in a program
4. It may be used in place of an END statement

Learning Objective: Code statements to format printed output.

2-44. The number or expression in parentheses following a TAB function is used to indicate the

1. number of characters in that field
2. number of blank spaces to be left at the beginning of that field
3. position where printing is to begin
4. line number where the values for the variables are stored

2-45. If a print position specified in a TAB function has already been passed, where will the data print?

1. In the next print zone
2. In the next available print position
3. The printer will backspace to the specified print position and overprint
4. On the next print line in the specified print position

2-46. What punctuation marks are most commonly used as separators in PRINT statements containing TAB functions?

1. Colons
2. Semicolons
3. Commas
4. Parentheses

2-47. Assume you are to center a column heading with 8 characters over a data field with 16 characters. What total number of blank print positions would be to the left of the heading?

1. Six
2. Five
3. Three
4. Four

2-48. Which of the following entries must be included in a-PRINT USING statement?

1. Line number of a format statement
2. variables or expressions
3. Both 1 and 2 above
4. Literals and format control characters

QUESTIONS 2-49 THROUGH 2-52 ARE TO BE JUDGED TRUE OR FALSE.

2-49. Literals specified in format lines must be enclosed in quotation marks.

1. True
2. False

2-50. Format lines may contain a combination of literals and format control characters.

1. True
2. False

2-51. When you are printing only literals, they may be included in the PRINT USING statement.

1. True
2. False

2-52. Only string variables may be printed using the TAB function.

1. True
2. False

2-53. By using an output image you may print numeric-variables in which of the following ways?

1. In any location on a print line
2. Left justified
3. With leading zeros
4. Each of the above

2-54. To use an output image you must have a/an

1. FORMAT statement and a PRINT statement
2. FORMAT statement and a PRINT USING statement
3. IMAGE statement and a PRINT statement
4. IMAGE statement and a PRINT USING statement

2-55. GIVEN:
```
30 PRINT USING 50,B
50 %$#,###.##
```

If B equals 199.255, what will print?

1. $1,992.55
2. $ 199.25
3. $199.25
4. $199.26

Learning Objective: Describe files and file handling concepts, terminology, and processing.

2-56. A series of characters used to identify a program is known as a

1. master file
2. transaction file
3. data name
4. program name

2-57. What is the primary reason for assigning a name to a program?

1. To allow it to be stored independently from the data
2. So it can be used with different sets of data
3. So it can be referenced, loaded, and run repetitively
4. To allow it to be executed more than once

2-58. Data stored independently from a program on an auxiliary storage medium is known as a

1. field
2. file
3. record
4. zone

2-59. Which of the following is a specified area of a record used for a particular category of data?

1. Field
2. File
3. Character
4. Zone

2-60. An item of data with all its associated data is known by which of the following terms?

1. Field
2. File
3. Record
4. Zone

2-61. Which of the following types of statements accomplishes end-of-file processing and signals the computer the file is no longer needed?

1. WRITE
2. RESET
3. RESTORE
4. CLOSE

2-62. Which of the following types of statements names a data file and makes it available for processing?

1. WRITE
2. OPEN
3. CLOSE
4. SAVE

2-63. The process of posting transactions to a master file in order to reflect current data is know as

1. editing
2. validating
3. verifying
4. updating

IN ANSWERING QUESTIONS 2-64 THROUGH 2-68, REFER TO FIGURE 7-2 IN THE TEXT AND THE RELATED TEXT MATERIAL.

2-64. The program has what total number of loops?

1. Six
2. Five
3. Three
4. Four

2-65. Numeric-variable K is used for which of the following purposes?

1. To control the FOR-NEXT loops
2. To count the number of records updated
3. Both 1 and 2 above
4. To control reading of the master file

2-66. Which of the following is the purpose of blocks 7, 8, and 9 on the flowchart?

1. Test for end of part numbers to be updated
2. Update on-hand quantity
3. Search array P for matching part number
4. Accumulate a total of parts data

2-67. If a part number is entered and not found in the master data, the program will do which of the following things?

1. Terminate with an error message
2. Print part # not found, enter part #
3. Add the part number to the master data
4. Assume end of data and go to the next segment of the program

2-68. Which of the following conditions would cause the parts data information to be printed on the items below stock level list?

1. If the on-hand quantity is less than the reorder-point quantity
2. If the on-hand quantity is equal to the reorder-point quantity
3. Both 1 and 2 above
4. If the on-hand quantity is greater than the reorder-point quantity

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5	☐	☐	☐	☐	_____	30	☐	☐	☐	☐	_____	55	☐	☐	☐	☐	_____
6	☐	☐	☐	☐	_____	31	☐	☐	☐	☐	_____	56	☐	☐	☐	☐	_____
7	☐	☐	☐	☐	_____	32	☐	☐	☐	☐	_____	57	☐	☐	☐	☐	_____
8	☐	☐	☐	☐	_____	33	☐	☐	☐	☐	_____	58	☐	☐	☐	☐	_____
9	☐	☐	☐	☐	_____	34	☐	☐	☐	☐	_____	59	☐	☐	☐	☐	_____
10	☐	☐	☐	☐	_____	35	☐	☐	☐	☐	_____	60	☐	☐	☐	☐	_____
11	☐	☐	☐	☐	_____	36	☐	☐	☐	☐	_____	61	☐	☐	☐	☐	_____
12	☐	☐	☐	☐	_____	37	☐	☐	☐	☐	_____	62	☐	☐	☐	☐	_____
13	☐	☐	☐	☐	_____	38	☐	☐	☐	☐	_____	63	☐	☐	☐	☐	_____
14	☐	☐	☐	☐	_____	39	☐	☐	☐	☐	_____	64	☐	☐	☐	☐	_____
15	☐	☐	☐	☐	_____	40	☐	☐	☐	☐	_____	65	☐	☐	☐	☐	_____
16	☐	☐	☐	☐	_____	41	☐	☐	☐	☐	_____	66	☐	☐	☐	☐	_____
17	☐	☐	☐	☐	_____	42	☐	☐	☐	☐	_____	67	☐	☐	☐	☐	_____
18	☐	☐	☐	☐	_____	43	☐	☐	☐	☐	_____	68	☐	☐	☐	☐	_____
19	☐	☐	☐	☐	_____	44	☐	☐	☐	☐	_____	69	☐	☐	☐	☐	_____
20	☐	☐	☐	☐	_____	45	☐	☐	☐	☐	_____	70	☐	☐	☐	☐	_____
21	☐	☐	☐	☐	_____	46	☐	☐	☐	☐	_____	71	☐	☐	☐	☐	_____
22	☐	☐	☐	☐	_____	47	☐	☐	☐	☐	_____	72	☐	☐	☐	☐	_____
23	☐	☐	☐	☐	_____	48	☐	☐	☐	☐	_____	73	☐	☐	☐	☐	_____
24	☐	☐	☐	☐	_____	49	☐	☐	☐	☐	_____	74	☐	☐	☐	☐	_____
25	☐	☐	☐	☐	_____	50	☐	☐	☐	☐	_____	75	☐	☐	☐	☐	_____